

Poster-2-3

Superconductivity in Nb₄SiSb₂ with a V₄SiSb₂-Type Structure and Implications of Interstitial Doping on its Physical Properties

Manuele Balestra,^{1,2} Omargeldi Atano,³ Robin Lefèvre,² Olivier Blaque,² Rolf Lortz,³ and Fabian von Rohr¹

¹ *Department of Quantum Matter Physics, University of Geneva, CH-1211 Geneva, Switzerland*

² *Department of Chemistry, University of Zürich, CH-8057 Zürich, Switzerland*

³ *Department of Physics, The Hong Kong University of Science and Technology, Clear Water Bay Kowloon, Hong Kong*

We report on the discovery, structural analysis, and the physical properties of Nb₄SiSb₂ - a hitherto unknown compound, crystallizing in the V₄SiSb₂-type structure. Nb₄SiSb₂ shows a transition to a superconducting state at a critical temperature of $T_c \approx 1.59$ K in the resistivity as well as in the discontinuity in specific heat. We further find that for Nb₄SiSb₂, the unoccupied sites on the 4b position can be partially occupied with Cu, Pd, or Pt. Insertion of mentioned electron donors into the void positions in the parent compound, lowers the superconducting transition temperature. The low temperature resistivity measurements show transitions to superconductivity at $T_c \approx 1.16$ K for Nb₄Cu_{0.2}SiSb₂, $T_c \approx 0.76$ K for Nb₄Pd_{0.2}SiSb₂ and $T_c \approx 0.84$ K for Nb₄Pt_{0.14}SiSb₂.